Claims

1. Optical arrangement for a laser diode arrangement with at least one row of emitter elements (4) which emit laser light and which are arranged in this row with their active layer in a common plane (X-Z plane) perpendicular to their fast axis (Y axis), and in the direction of the slow axis (X axis) following one another and spaced apart, with at least one correction optics (5, 6, 18) which extends in the slow axis (X axis), which follows the emitter elements (4) in the beam direction, and which acts as the fast axis collimator and the slow axis collimator, characterized in that the correction optics is segmented at least in a part (5) which acts as the fast axis collimator and consists of several correction optics segments (5', 18') which follow one another in the slow axis (X axis).

2. Optical arrangement for a laser diode arrangement with at least one row of emitter elements (4) which emit laser light and which are arranged in this row with their active layer in a common plane (X-Z plane) perpendicular to their fast axis (Y axis), and in the direction of the slow axis (X axis) following one another and spaced apart, with at least one correction optics (5, 6) which extends in the slow axis (X axis), which follows the emitter elements (4) in the beam direction, and which acts as the fast axis collimator and the slow axis collimator, wherein the correction optics (18) is formed by at least one lens element (19) which is made as the fast axis collimator and also as the slow axis collimator.

3. Optical arrangement as claimed in claim 2, wherein at least one lens element (19) on the entry side with a lens surface which acts as the fast axis collimator, preferably with a cylinder lens surface with the axis lying in the direction of the slow axis (X axis) and on the exit side with at least one lens surface which acts as the slow axis collimator, is made for example with at least one cylinder lens surface with its axis lying in the fast axis (Y axis)

4. Laser diode arrangement as claimed in claim 2 or 3, wherein the correction optics (18) has several lens elements (19) which adjoin one another in the direction of the slow axis (X axis).

5. Optical arrangement as claimed in one of the preceding claims, wherein the correction optics (18) is produced in one piece or monolithically with the lens elements (19).

6. Optical arrangement as claimed in one of the preceding claims, wherein each lens element (19) of the correction optics (18) is assigned to an emitter element (4).

7. Optical arrangement as claimed in one of the preceding claims, wherein the correction optics (18) is segmented and consists of at least two correction optics segments (18') which follow one another in the direction of the slow axis (X axis).

8. Optical arrangement as claimed in claim 7, wherein at least one correction optics segment (18') has at least two lens elements (19).

9. Optical arrangement as claimed in one of the preceding claims, wherein the correction optics segments (5', 18') are adjusted and fixed independently of one another.

10. Optical arrangement as claimed in one of the preceding claims, wherein the correction optics (5, 6, 18) collimates or shapes the beams of the emitter elements (4) of at least one row (3) into beams which are parallel or roughly parallel to one another in the plane of the slow axis (X axis).

11. Optical arrangement as claimed in one of the preceding claims, wherein the correction optics (5, 6, 18) collimates or shapes the beams of the emitter elements (4) of at least one row (3) into beams which are parallel or roughly parallel to one another in the plane of the slow axis (X axis) and adjoin one another in the direction of the slow axis (X axis) without overlapping one another.

12. Optical arrangement as claimed in one of the preceding claims, wherein the part (6) of the correction optics which acts as the slow axis collimator has a host of lens elements (6') which in their optical action correspond to cylinder lenses which are oriented with their axis in the fast axis (Y axis), which adjoin one another in the direction of the slow axis and of which one is assigned to one emitter element (4) at a time.

13. Optical arrangement as claimed in one of the preceding claims, wherein the correction optics has at least one fast axis collimator (5) for at least one row (3) of emitter elements (4) which forms the segmented part of the correction optics and which

consists of several collimator segments (5') which follow one another in the slow axis (X axis).

14. Optical arrangement as claimed claim 13, wherein the collimator segments (5') of the fast axis collimator (5) of at least one row (3) of emitter elements (4) are adjusted and fixed independently of one another.

15. Optical arrangement as claimed in one of the preceding claims, wherein the correction optics has at least one slow axis collimator (6) located in the beam path (Z axis) following the fast axis collimator (5).

16. Optical arrangement as claimed in claim 15, wherein the slow axis collimator (6) is formed by a host of cylinder lens elements (6) which in their optical action correspond to cylinder lenses which are oriented with their axis in the fast axis (Y axis), which adjoin one another in the direction of the slow axis and of which one is assigned to one emitter element (4) at a time.

17. Optical arrangement as claimed in one of the preceding claims, wherein in the beam path following the correction optics (5, 6) there is focussing optics (7, 7b, 7c) for focussing the laser beams of the emitter elements (4) at a common focus (8, 8b, 8c).

18. Optical arrangement as claimed in one of the preceding claims, wherein the segmented part (5) of the correction optics has two to five segments (5').

19. Optical arrangement as claimed in one of the preceding claims, wherein there is a connection area or gap between two

segments (5') which follow one another between the two emitter elements (4), preferably in the middle or roughly in the middle between two emitter elements.

20. Optical arrangement as claimed in one of the preceding claims, wherein the part (6) of the correction optics acting as the slow axis collimator or the slow axis collimator (6) is located in a plane (E) which is defined by the fast axis (Y axis) and the slow axis (X axis) and is located in the beam path where or roughly where the edge beams of the beams diverging in the slow axis (X axis) intersect with their edge beams.

21. Optical arrangement as claimed in one of the preceding claims, wherein the part (6) of the correction optics acting as the slow axis collimator or the slow axis collimator (6) is formed by several cylinder lenses combined preferably into a monolithic slow axis collimator (6).

22. Optical arrangement as claimed in one of the preceding claims, wherein the collimator segments (5') of the fast axis collimator (5) are cylinder lenses or act as cylinder lenses.

23. Optical arrangement as claimed in one of the preceding claims, wherein there are at least two rows of emitter elements (4) and wherein the rows with the slow axis (X axis) of the emitter elements (4) are parallel to one another.

24. Optical arrangement as claimed in one of the preceding claims, wherein there are at least two rows of emitter elements (4) and wherein the emitter elements (4) of the rows with their active layers are located in parallel planes.

25. Optical arrangement as claimed in one of the preceding claims, wherein there are at least two rows of emitter elements (4) and wherein the rows are offset against one another at least in the slow axis (X axis).

26. Optical arrangement as claimed in one of the preceding claims, wherein there are at least two rows of emitter elements (4) and wherein in the beam path following the fast axis collimator (5) there is at least one optical coupling element and/or deflection element (14, 16, 17) in order to combine the laser beams of the rows into a common beam cluster.

27. Optical arrangement as claimed in one of the preceding claims, wherein there are at least two rows of emitter elements (4) in at least one stack (9, 10), wherein the rows of emitter elements (4) in the stack (9, 10) are offset against one another in the direction of the fast axis (Y axis) and wherein for each row of emitter elements (4) there is one separate, segmented part (5) of the correction optics or segmented fast axis collimator (5) with at least two segments (5').

28. Optical arrangement as claimed in one of the preceding claims, wherein with several rows of emitter elements (4), for at least one row of emitter elements (4) there is a segmented part (5) of the correction optics or a segmented fast axis collimator (5).

29. Optical arrangement as claimed in one of the preceding claims, wherein for each row of emitter elements (4) there are separate correction optics (5, 6).

30. Optical arrangement as claimed in one of the preceding claims, wherein for each row of emitter elements (4) there is a separate slow axis collimator (6).

31. Optical arrangement as claimed in one of the preceding claims, wherein there are several rows of emitter elements (4) in at least two stacks (9, 10), the rows in each stack being offset against one another in the direction of the fast axis (Y axis).

32. Optical arrangement as claimed in claim 31, wherein at least two stacks (9, 10) are offset against one another in the direction of the slow axis (X axis).

33. Optical arrangement as claimed in one of the preceding claims, wherein the planes of the rows of emitter elements (4) of at least two stacks are offset in the direction of the fast axis (Y axis) such that the planes of the rows of one stack (9) lie between the planes of the rows of another stack (10).

34. Optical arrangement as claimed claim 33, wherein there is an optical means (11) with which the beams of the emitter elements (4) in the slow axis (X axis) are shifted such that the beams of the emitter elements of all stacks form a common beam cluster.

35. Optical arrangement as claimed in one of the preceding claims, characterized by focussing optics (7, 7b, 7c) which is common to the beams of all emitter elements (4).

36. Optical arrangement as claimed in one of the preceding claims, wherein at least one row of emitter elements (4) is formed by a diode laser bar (3).

37. Optical arrangement as claimed in claim 36, wherein the laser bar (3) is a semiconductor laser chip with several emitters (4).

38. Optical arrangement as claimed in one of the preceding claims, wherein the emitter elements each consist of at least one emitter (4) which radiates laser light.

39. Optical arrangement as claimed in one of the preceding claims, wherein the emitter elements each consists of at least two emitters (4) which are located at a distance from one another which is smaller than the mutual distance of the emitter elements in each row.

40. Optical arrangement as claimed in one of the preceding claims, wherein the distance between the emitter elements and the width of the emitter elements in the direction of the slow axis (X axis) are chosen such that the occupation density or the quotient of the total length of the radiating areas of one row and their total length is less than 10%.

41. Laser diode arrangement with at least one row of emitter elements (4) which radiate laser light and which are located in this row with their active layer in a common plane (X-Z plane) perpendicular to their fast axis (Y axis) and with an optical arrangement as claimed in one of the preceding claims.

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